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BOLSTERING COMMUNITY TIES AS A MEANS OF REDUCING CRIME *

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ABSTRACT: In this paper we study the effects of bolstering community ties on local crime rates. To do so, we take advantage of the quasi-random nature of the implementation of the deployment of a community health policy in the city of Barcelona. The health-care program called Salut als Barris (BSaB; literally, `health in the neighborhoods') aims to improve health outcomes and reduce inequalities in the most disadvantaged neighborhoods of the city through community-based initiatives and empowerment of citizens. The economic and sociological literature suggests that such a policy may also affect other aspects of overall welfare, such as criminal activity. In order to test the hypothesis that BSaB reduces crime, we used monthly data at the neighborhood level and a staggered differences-in-differences approach. Overall we found that BSaB significantly reduces victimization of women. Furthermore, this decline is seen in types of crime we classify as `anger' and `intimate' crimes, with the reduction ranging from 9% to 18%. We argue that this result is due to the stronger community ties, and that it therefore provides evidence that non-traditional crime prevention policies can work.

JEL Codes: C23, I18, I28, J18.
Keywords: Crime, community action, differences-in-differences

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1 Introduction

Urban economics has studied innumerable aspects of differences between and within cities, among which growth and inequality have occupied the most attention. However, as already pointed out by Glaeser et al. (1996) and Glaeser and Sacerdote (1999), the proliferation of contrasts related to crime is also striking and their findings are of particular relevance to both individual and overall welfare. The recent literature suggests that individual choices concerning participation in crime may be significantly affected by existing norms and networks (Glaeser et al. 1996; Patacchini and Zenou 2009).

Regarding the relationship between crime and social networks, there is no clear-cut consensus as to whether we should expect the empirical correlation to be positive or negative, whether there is a causal link (and in which direction), or what implications the relationship may have for policy-making. On the one hand, social networks may work as communication channels for criminals and may also offer ways to cover up criminal activity. Recent work emphasizes that more tightly knit social networks can raise aggregate crime levels due to the sharing of know-how among criminals (Calvó-Armengol and Zenou 2004) or imitation of peer behavior (Glaeser et al. 1996; Calvó-Armengol et al. 2009). However, on the other hand, they also increase the opportunity cost of committing a crime. Such a possibility is closely related to the concept of social capital, defined by Guiso et al. (2011) as a set of values and beliefs that help cooperation within a community. Indeed, Coleman (1988) already related the strength of social sanction to social network closure. Additionally, systemic models of community organization are built on the notion that well-developed local network structures reduce crime (Flaherty and Brown 2010). This is related to the fact that networks may increase returns on non-criminal activities and raise detection probabilities.

In this paper, we argue that initiatives that bolster community ties in disadvantaged neighborhoods succeed at reducing local crime rates, especially for crimes that are not driven by a monetary incentive. We test this hypothesis by analyzing a community health policy that was implemented in a quasi-random fashion in the city of Barcelona (*Barcelona Salut als Barris*, BSaB; literally, 'health in the neighborhoods') and using a unique geocoded criminal offense dataset. We apply a staggered differences-in-differences methodology combined with a battery of socioeconomic controls and time and space fixed effects. To the best of our knowledge, no published studies have adopted such an approach, with similarly rich data. Our estimates suggest that the observed reduction in certain criminal actions can be attributed to the implementation of BSaB. Specifically, we find that female victimization rates drop in those neighborhoods that benefit from BSaB. The policy greatly reduces crimes against the person and those related to temperamental features of the perpetrator, as well as those where there is a very close personal link between perpetrator and victim (which we label as 'intimate' crimes).The reductions

range from 9% to 18%. We also find that that the underlying mechanisms behind the results are not due to health improvements in the participating neighborhoods, but rather are linked to a more robust social fabric.

This research is ambitious since it deals with the impact of community ties on crime in an urban context; a line of research that is extremely relevant to the fields of economics of crime. Our ultimate goal is to understand better the empirical determinants of criminal activity, how social networks deter or encourage them, and how they interact with socioeconomic factors. The novelties of this research reside in many factors. Firstly, the deployment of the policy provides us with an exogenous variation in the drivers of community ties at a very small geographical level, which allows us to determine causal links. Secondly, we make use of a geocoded and highly detailed database that includes data on registered victims, offenders and types of crime. This also adds to the accuracy of our analysis, as we can analyze whether there are differential effects according to crime types, and the demographic characteristics of those involved. Finally, this work contributes to research conducted outside the United States and considers a city in which the residents are heterogeneous in terms of economic and sociodemographic characteristics. Together, these features constitute the external validity of our exercise. Our findings will contribute to academic research and will offer specific guidance for policy-making to deter criminal activity, moving beyond traditional approaches. Furthermore, we hope that this case study will benefit other cities, given that the policy recommendations that emerge from it will be applicable to similar urban settings.

The rest of the paper is organized as follows. In Section 2 we analyze the link between community capital and crime. Section 3 describes the institutional framework of the initiative we analyze. Then in Section 4 we present the data we use, and we define our main variables. Section 5 lays out the methodology we follow as well as our empirical model. Then after presenting our main results in Section 6, in Section 7 we offer our conclusions and policy recommendations.

2 Brief review of community capital

Crime and social interactions have been studied in economics for quite some time. In their seminal paper on the subject, Glaeser et al. (1996) (and also Glaeser et al. 2002) detected a large number of social interactions in criminal behavior. Those authors present a model in which social interactions create enough covariance across individuals to explain the high cross-city variation in crime rates in the US. Additionally, their model provides an index of social interactions: the proportion of potential criminals who respond to social influences. The index suggests that the number of social interactions is highest in petty crimes, moderate in more serious crimes, and almost negligible in murder and rape.

Meanwhile, there has been extensive debate in the literature regarding the related

topic of social capital: what it actually is and how it can be measured. In this regard, Putnam et al. (1994) set the stage for such considerations when analyzing the effects of social engagement. Ever since then, social capital has been defined and measured in several different ways by economic researchers. For example, Tabellini (2010) measured culture by indicators of individual values and beliefs (such as trust and respect for others) in order to explore the issue of whether it has a causal effect on economic development. Indeed, he finds that the exogenous component of culture due to history is strongly correlated with current regional economic development. Taking a different approach, Nannicini et al. (2013) investigate political accountability as a channel through which social capital may improve economic well-being. The authors find that punishment for political misbehavior is more severe in districts with greater social capital, approximated by blood donations. For their part, Guiso et al. (2011) take a more theoretical perspective on social capital. They review previous research into its role, as they understand that previous definitions have been too vague or broad, leading to mixed results and interpretations. To resolve such discrepancies, the authors restrict their definition of social capital to one of civic capital, seen as a set of values and beliefs that help cooperation in a community. Finally, Jackson (2017) provides a typology of social capital and considers seven forms: information, brokerage, coordination and leadership, bridging, favor, reputation, and community capital. He then defines community capital as the ability within a community to sustain cooperative behavior in transacting, the running of institutions, the provision of public goods, the handling of commons and externalities, or collective action. This last definition is the one that we will use as a reference for the remainder of this paper.

Most certainly it is the case that social capital can play an important role in many economic spheres. Among these, the economics of crime is a very important one, and a number of papers have focused on social capital as a driver of crime at the local geographical level (Hirschfield and Bowers 1997; Lederman et al. 2002; Buonanno et al. 2009; Akçomak and Ter Weel 2012). However, the results do not present any crystal clear conclusion. For example, while in Buonanno et al. (2009) the authors do not find a clear effect of social capital on levels of crime, Lederman et al. (2002) state that trust has a significant and negative effect on violent crime rates. Moreover, Akçomak and Ter Weel (2012) use both historical and current data from Dutch municipalities and find a negative correlation between social capital and crime rates. Additionally, they find that current levels of social capital are affected by historical sociodemographic characteristics. This last finding is also shared by Lederman et al. (2002). Also important for our research, Hirschfield and Bowers (1997) state that there is a significant relationship between social cohesion (measured in terms of social control and ethnic heterogeneity) and crime levels in disadvantaged areas. They also indicate that in those areas where levels of social cohesion are high, crime is significantly lower than otherwise expected.

Sociologists have also devoted effort to understanding the link between social capital and crime rates. Over the last two decades, researchers have explored social capital as a local factor in crime prevention. Here, efforts in understanding the social pattern of crime rely on social disorganization theory and systemic models of community attachment. Social disorganization is defined as the inability of a community structure to realize the common values of its residents and maintain effective social controls (Sampson 1988; Sampson and Groves 1989). This theory has recently been linked to the concept of social capital, defined as those features of social organization (networks, norms of reciprocity and trust) that facilitate cooperation between citizens for mutual benefit. In fact, a growing number of studies support the link between low social capital and high crime rates (Rose and Clear 1998; Kennedy et al. 1998). Moreover, the systemic model of community attachment (Flaherty and Brown 2010) emphasizes the effect of community structural characteristics on neighborhood friendship and associational ties, and their effect on informal social control and crime levels. The systemic model hypothesis is that more extensive social ties decrease crime rates since communities with wider friendship and associational ties have greater potential for informal social control, due to social cohesion. This theoretical context provides a robust framework for our present research.

Along similar lines, Warner and Rountree (1997) analyze the role of local social ties in mediating between structural conditions and crime rates, conditional upon neighborhood characteristics. Using data from 100 Seattle census tracts, the authors find that the extent to which friendship networks decrease crime depends in part on the racial makeup of the neighborhood. Meanwhile Kawachi et al. (1999) present a conceptual framework for analyzing the influence of the social context on community health, using crime as the indicator of collective well-being. Those authors argue that two sets of societal characteristics influence the level of crime: the relative degree of deprivation, and the degree of cohesion in the social relations between citizens. Unlike Warner and Rountree (1997), Kawachi et al. (1999) find consistent evidence in agreement with social disorganization theory, as the strongest correlates of violent crime turned out to be indicators of social capital. Additionally, Takagi et al. (2012) find that generalized trust, reciprocity, supportive networks, and social capital within a neighborhood were inversely associated with the probability of becoming a victim of crime.

3 Institutional Setup: Salut als Barris in Barcelona

In the framework of public policy analysis, the community component usually plays an important role. This is why this component has been studied worldwide and several definitions have been developed. For example, the Local Government Association of the United Kingdom (LGA), an important reference for these matters, defines community action as 'any activity that increases the understanding, engagement, and empowerment of

communities in the design and delivery of local services' (Local Government Association 2016). Even though the activities may differ, greater engagement of local citizens is key in the planning, design, and delivery of local services. According to the LGA, such action can help to build a community and social capacity by creating social networks. Among its many benefits, improving community cohesion and safety are mentioned. Moreover, in Barcelona the local authorities define community action as 'a process of stimulating cooperative social relationships between members of a community (neighborhoods, city blocks, blocks of flats, etc.), a human collective that shares a space and a sense of belonging that results in mutual links and support, and that motivates members to become central agents in the improvement of their own reality' (Ajuntament de Barcelona 2005). Therefore, the objective of community action is to improve social well-being by promoting active participation in actions designed to achieve it. Community action requires the empowerment of citizens to drive change and improvements beyond their own individual spheres.

In 2005, local health authorities in Barcelona (*Agencia de Salut Publica de Barcelona* (ASPB)[1] and *Consorci Sanitari de Barcelona* (CSB)), jointly with different actors from the 10 districts of the city, started developing the community health program 'Health in the Neighborhoods' in the city of Barcelona (*Barcelona Salut als Barris*, BSaB). The program aimed to improve health outcomes and reduce inequality between the disadvantaged neighborhoods and the rest of the city. In the city of Barcelona, the program has continued to develop uninterrupted since it began in 2008.[2]

BSaB is implemented through community-based interventions, and it targets areas where income is below 90% of the city median. We should note that all potentially participating areas were already benefiting from a previous location-based policy, the 'Neighborhood Act' (*Llei de Barris*, LDB, Generalitat de Catalunya 2004), which was passed in the whole of the region of Catalonia to improve living conditions in the most disadvantaged neighborhoods. However, and importantly for us, the LDB was a project focused on improving infrastructure.[3] Therefore, as the community component of the LDB was not particularly strong and, to the extent that there was such a component, it

[1] All these initializations are from the original Catalan.

[2] The program has been kept running even though there have been changes in the party in power in local government, both at the regional and city level. While in 2005 the center-left 'Socialist Party' was in power both in the region of Catalonia (since 2003) and in the city of Barcelona (since 1979), it was ousted by the center-right *'Convergencia i Unio'* coalition in 2010 and 2011 respectively. Currently (since 2015), Barcelona City Council (*Ajuntament de Barcelona*) is run by *Barcelona en Comu*, a left-leaning populist party. BSaB is still running.

[3] In all seven of the LDB funding programs, 143 of the 450 applications received from the whole of Catalonia were granted finance. Up until 2014, just 8% of the LDB projects were carried out in the city of Barcelona, sometimes grouping together several neighborhoods, all of them belonging to disadvantaged areas. Examples of the improvements in infrastructure for public spaces and facilities can be seen in González-Pampillón et al. (2017). As much as 80% of the funds were spent on public spaces and facilities for public use, while an additional 10% was devoted to renovating the existing stock of apartment buildings.

was present in all potentially targeted neighborhoods, it will not cause any confounding effects for our study.

Some analysis of BSaB has already been performed. While Díez et al. (2012) describe the experience, achievements, lessons, and challenges of the implementation of BSaB, Sánchez-Ledesma et al. (2017) characterize the BSaB prioritization procedure. These last authors state that the community perspective of health sensitizes and empowers the community, encourages mutual support among its members and promotes their importance by making them responsible for the process of improving their own reality. Additionally, Barbieri et al. (2018) state the need to identify key indicators for measuring and characterizing community action for health. Based on research into 49 neighborhoods in Barcelona, Barbieri et al. (2018) devise an index to measure and characterize community action for health, using different indicators. However, this literature on BSaB is mostly related to descriptive analysis and written from a sociological point of view. Hence, causal analysis of the policy has yet to be undertaken.

3.1 Description of the program

BSaB was deployed between 2008 and 2014 in 12 of the 49 neighborhoods potentially participating, out of the 73 in the city of Barcelona. The 49 neighborhoods potentially included were those in which average income was below 90% of the city median and where some LDB activity was taking place. The 12 neighborhoods included in BSaB represented around 15% of the city population and 25% of the potentially participating population[4]. A key feature for our identification strategy is that the progressive rollout of BSaB in the territory did not follow any specific pattern with regard to socioeconomic or demographic characteristics, thereby allowing it to be regarded as a quasi-random experiment[5]. The deployment and timing of BSaB are presented in Table 1 and Figure 1.

[4]See Table A1 in Appendix for population and income data of all 73 neighborhoods in Barcelona in 2007 and 2014.

[5]The quasi-random deployment of BSaB was confirmed by the public authorities running the program. Importantly, they reported that crime levels were not considered when deciding BSaB implementation and deployment. This is statistically assessed in later sections.

Table 1: BSaB deployment by neighborhoods

Neighborhood	**Start Date**	**First Priority**
Roquetes	Jun-2008	Mental Health
Poble Sec	Jun-2008	Mental Health
St. Pere, Santa Caterina i la Ribera	Jun-2009	Drugs
Torre Baro	Jun-2009	Sexual Health
Ciutat Meridiana	Jun-2009	Sexual Health
Vallbona	Jun-2009	Sexual Health
Barceloneta	Jul-2010	Drugs
Baro de Viver	Mar-2011	Drugs
Bon Pastor	Mar-2011	Drugs
Raval	Oct-2011	Sexual Health
El Besos i el Maresme	Oct-2013	Drugs
Verneda i La Pau	Nov-2014	Mental Health

Source: Agencia de Salut Publica de Barcelona (ASPB).

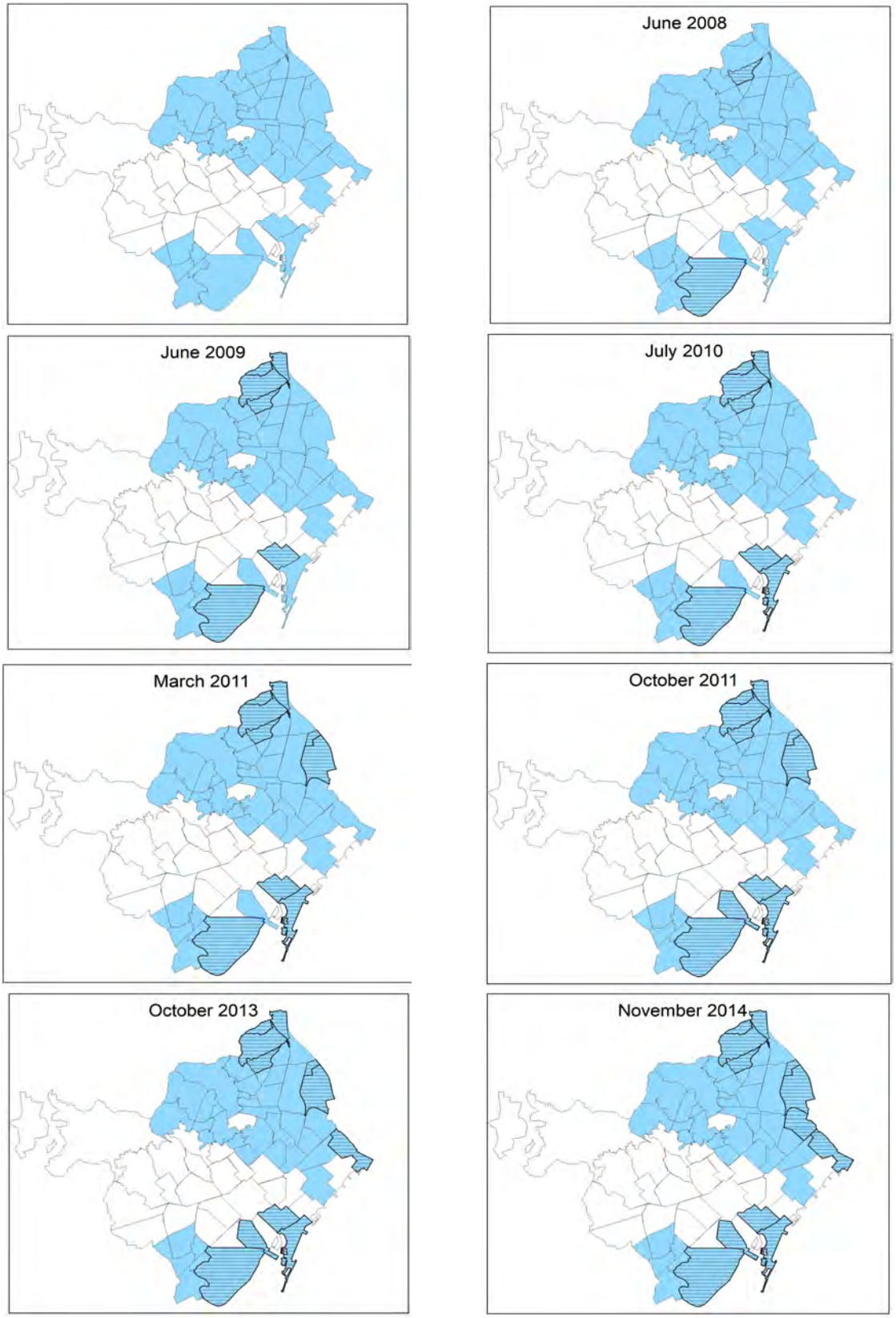

Figure 1: Deployment of BSaB interventions in the city of Barcelona.

Note: The colored neighborhoods are those that were potentially included in BSaB due to their income characteristics. Those that in addition have hatching were those that actually participated.

As explained in Díez et al. (2012), in the implementation of BSaB, plurality, participation, sustainability, evidence and evaluation were applied in the following phases:

1. Establishment of political alliances and a steering group to facilitate interventions (3 months' time, pre-intervention).
2. Construct qualitative and quantitative community knowledge to list perceived problems (1 to 3 months' time, pre-intervention).
3. Prioritization of problems and interventions by the local community and authorities (1 day, pre-intervention).
4. Drawing up of an intervention plan for previously defined lines of action. Intervention starts.
5. Evaluation of the implementation of the overall plan and of each intervention (1 to 3 years, post-intervention).
6. Maintenance of the working group on health, after the intensive phase (3 to 4 years, post-intervention).

The interventions are intended to facilitate non-competitive physical activity, social relationships, healthy recreation, health literacy, and sexual health. Some examples of interventions are attention for young consumers of addictive substances (alcohol, tobacco, marijuana), integration of the drug-dependent population, training and job placement, sexual and reproductive health advice, parenting skills programs, mental healthcare, and healthy leisure workshops (see Díez et al. 2012; Generalitat de Catalunya 2014; Comissionat de Salut 2016)[6]. Table 1 indicates which of these intervention fields were seen by residents as priorities in each neighborhood. However, each neighborhood ended up with a unique combination of interventions, making a heterogeneous analysis by intervention type unfeasible.

For example, in Ciutat Meridiana, one of the activities was named 'Alternative Fridays'. Targeted at adolescents aged 14-18, it aimed to provide healthy leisure activities. In its first edition, over 200 individuals participated, of whom 73% were men and around 60% were foreigners. In satisfaction surveys, respondents were very satisfied and a quarter of participants stated that the activities should be more frequent. Another example is the 'Syrian' program at Bon Pastor. This was aimed at increasing knowledge and awareness of contraception, reproductive health and the offer of public services available in the neighborhood, especially for the immigrant population. The program reached 745 individuals and according to a survey of participants, satisfaction was very high (median of 9/10).

Another important factor in the policy deployment is that these interventions were mostly managed and run in each neighborhood by the local health center (CAP) alongside

[6]See Table A2 in the Appendix for a full list of activities run in the framework of BSaB.

a community group that included representatives of civic entities and community associations, as well as social workers. There are almost 70 of these centers throughout the city and most of them are related exclusively to a specific neighborhood.[7] Because each CAP has a certain area and population under its responsibility that is set by the administration, our identification strategy is even stronger as spillovers from one neighborhood to another are highly unlikely.[8] However, and very importantly for us, all of these interventions were run from the beginning under a community perspective, involving the steering group, the local community, and the authorities. In fact, it is this communal component of BSaB that led us to hypothesize that BSaB boosted community ties and consequently reduced local crime rates.

3.2 Potential mechanisms: the community component

Theoretically, the BSaB policy may affect criminal activity via different pathways. Initially, the most obvious may be the health channel, by which the improved health status of the affected population may reduce criminal activity. Along these lines, Bondurant et al. (2018) recently estimated the effects of expanding access to substance-abuse treatment on local crime for US counties, and they indeed find that it reduces violent and financially motivated crimes in a certain area, but not immediately.

However, due to the characteristics of BSaB that we have previously described, we argue that improvements in health are not behind the effect that the policy may potentially have on criminal activity. Instead, we claim that a mechanism of community ties is operating. As previously mentioned, a body of research has documented the association between community capital and becoming a victim of crime. The theoretical pathways via which community capital leads to crime prevention include both formal and informal mechanisms. For example, Sampson and Laub (1995) state that communities with strong social capital are able to exert informal social control and also bolster the capacity to obtain services from public agencies and formal institutions. In this particular policy, due to the high degree of involvement that BSaB requires from neighbors, it is also expected that closer links are built up within the neighborhood. As a result of this, informal social control may also arise, increasing the probability of getting caught when committing a crime, potentially leading to a fall in the crime rate in the area.

Several findings can help disentangle the potential mechanisms that lead to our results. Firstly, we estimate the timing of the results in criminal activity. We claim that if the response of the crime rate to the policy is relatively fast, it is harder to attribute the reaction to improved health of the population. If health was actually the mechanism

[7]Every resident in Barcelona is assigned to a CAP according to their home address. In a sense, their area of influence (called the Basic Health Area) can very much be seen as that of a school district in the US. Basic Health Areas coincide to a large degree with neighborhoods.

[8]This was also confirmed by the authorities running the BSaB program.

behind the effects of BSaB on crime, the results would take some time to materialize (as in Bondurant et al. (2018)). Secondly, to definitely rule out the health channel, we examined whether there have been any changes in the health status of participants and non-participants. Consequently, if we observe a change in crime rates within a short interval of time after policy implementation and if no effect is found on health, potential impacts on crime will be due to the community feature of the policy and more robust community ties.

4 Data and variables

The main data source for this project was a geocoded database of all recorded crime in Catalonia from 2007 to 2014. These data were provided by the Catalan police authority (*Mossos d'Esquadra*). It comprises all recorded crime with details of the exact time and place of the crime as well as the type of crime at different levels of aggregation. In total it contains for over 1.5 million entries. Such a large number of detailed observations in our main dataset allows us to estimate our coefficients of interest at a relatively high time frequency (such as a month) and a very low geographical level (such as a neighborhood) while maintaining the robustness of the results unaltered.

Moreover, this data source provides information on the perpetrators who committed the crimes, as well as on the victims, when available. The fact that we can estimate figures for victims is of great value. This is not only true from an academic perspective, where these types of figure are rarely available, but also in light of the policy under review. As BSaB is aimed at specific populations through different interventions, it is possible to evaluate whether the targeted groups are more or less likely to become victims of crime.

Additional data sources came from the Catalan Health Department (ICS) and from the Public Policy and Government Institute (IGOP), a research group at the Universitat Autonoma de Barcelona (UAB; Barbieri et al. 2018). These data sources provide information on the neighborhoods potentially targeted, those actually treated, the timing of the policy in each neighborhood, prioritization of issues, and details of the activities that formed part of each intervention. All this information allows us to understand our setting in great detail, build our main explanatory variable (BSaB with exact timing by neighborhood) and also, very importantly, to justify the quasi-random nature of the public intervention.

What is more, we have at our disposal a remarkably rich set of socioeconomic variables that will act as controls for our main estimations. Most of them are available at the neighborhood-month level, making such a dataset even more noteworthy. First of all, we have information on the registered local associations (registration date and aims), which allows us to understand the importance of the associational dynamism in the neighborhood. This information was provided by the Catalan regional authorities (*Generalitat de*

Catalunya). Moreover, and related to business cycles, we also have details of registered unemployment rates,[9] as well as housing market prices per square meter. Finally, we also include a proxy for tourism pressure in per capita terms.[10] This last variable accounts for potential confounders resulting from the related economic activity, which is of great relevance in a city highly exposed to such inflows, as Barcelona is. These last three variables (registered unemployment, house prices, and tourism pressure) were built from information provided by Barcelona City Hall (*Ajuntament de Barcelona*). While associations, house prices and registered unemployment are considered at the neighborhood level, the tourism pressure index is taken at the district level, as a neighborhood may be too small of an influence area. A summary of the main variables of this analysis is shown in Table A3 of the Appendix. Our final crime database is comprised of 4,704 observations, resulting from the product of the 12 months in 8 years (2007-2014) in the 49 neighborhoods potentially included in Barcelona. For each observation (neighborhood-year-month) victim and crime rates per 1,000 inhabitants were determined, as well as the socioeconomic variables previously mentioned. However, by adding the full set of controls, the number of observations was reduced to 3,528. This was due to the fact that housing prices and registered unemployment rates have only been available since 2009.

4.1 Creating crime typologies

As previously stated, the database provided by the Catalan police is very rich in many aspects, one of which is the way crime is codified. There are over 300 classes of crime recorded, which cover more than 190 articles of the Spanish Penal Code. Even though having such a large amount of information is of great value for our research, this codification is not functional for our analysis. Therefore, based on those 300 classes, we constructed 17 detailed crime categories, which we also group into 3 broad categories. Both categorizations cover the entire range of recorded crime types.[11]

However, considering our setting, we understand that further and more specific crime categories should be designed. To this end, we came up with two new broad crime categories that are transverse to those previously defined. First, we created a broad category we named 'intimate crimes', which covers the detailed categories of family, sexual and gender violence. The rationale behind this aggregation is that it summarizes all the crimes related to very close personal relationships. Secondly, following the description by Currie and Almond (2011), we defined a broad category we named 'anger crimes' that includes the detailed categories of criminal damages, bodily harm, disobedience,

[9] According to the National Statistics Institute (INE), 76% of all unemployed individuals appear in the unemployment register.

[10] We consider the number of tickets sold daily in every public museum in the city. This proxy is highly correlated (0.69) with the total number of tickets sold in every tourist outlet point in the city.

[11] Details of crime classifications are presented in Table A4 of the Appendix.

and threatening behavior. These are crimes that are not motivated by money or close emotional links, but still have some behavioral or personal component.[12] Except for criminal damage to property, all the other categories correspond to crimes against the person. We understand that criminal damage to property still needs to be included in such a category as it may be a result of anger, irritation or rage. In this regard, the richness of the data allows us to depart from traditionally set crime typologies (that may be too broad or misleading), and analyze new ones that focus on exactly the types of crime we believe the BSaB policy may affect via the community channel. Hence, this helps to pinpoint the causal effects of community ties on crime rates better.[13]

This classification indicates that intimate and anger crimes account for almost 1 out of every 5 crimes recorded, and that anger crimes are much more frequent than intimate crimes. Even though at first it may seem that these do not represent an important part of overall crime, we must consider that they inflict a much higher 'disutility' on their victims than other more frequent types of crime. Indeed, Dolan et al. (2005) indicate that while discounted QALY[14] losses resulting from rapes and sexual assaults are 0.561 and 0.160, from a common assault this figure is just 0.007. This demonstrates the importance of dealing with such offenses.

Table 2: Crime distribution by typology and location

	% Crime	**% Residence**	**% Street**	**% Other**
All crime	100	10	45	46
Intimate	3.0	62	25	13
Family	0.7	68	19	13
Gender	2.0	64	26	10
Sexual	0.3	36	31	32
Anger	15.9	21	45	35
Criminal damages	8.5	21	41	38
Bodily harm	3.0	11	52	38
Disobedience	1.8	8	67	25
Threatening behavior	2.5	43	31	26
Drugs	0.7	3	87	10

Source: Our own, constructed from Catalan Police data.

Additionally, Table 2 shows how crime types are distributed by location. From this table, it is clear that there are some typologies with location patterns that are particularly attached to an address. These are indeed those which we already included in the intimate crime category. Also, some others, such as threatening behavior (included in the anger

[12]Currie and Almond (2011) state that temperamental skills are often not mentioned directly in the literature but are proxied by psychological traits, social skills, and behavioral issues.

[13]Details of these two new categories are presented in Table A5 of the Appendix.

[14]Quality-adjusted life years.

broad category), also present a high share of being committed at a residence. Because of this location pattern, and its relevance in light of the characteristics of the BSaB policy, our analysis will mainly focus on intimate and anger crimes. We will also pay particular attention to drug offenses, as they are closely related to the initiatives carried out as part of BSaB.

Tables A5 to A8 in the Appendix show summary statistics for our dependent variables and controls. Results are shown both for the entire city of Barcelona (all 73 neighborhoods) and for the area potentially included in BSaB (49 neighborhoods).

5 Empirical Strategy

In order to evaluate the impact of BSaB on local crime rates, we adopted a staggered differences-in-differences approach (sDiD), where our observational unit was a neighborhood-month pair. The 'staggered' term comes from the fact that treatment was implemented over a different period of time for the different observational units. This method quantifies the impact of a given program (in this case, BSaB) as the difference of outcome changes (post- vs. pre-intervention) between participants and non-participants. In this case, and in order to have comparable treatment and control units, the spatial units of analysis were the neighborhoods in Barcelona where some LDB activity was taking place and whose income was below 90% of the city median (those colored blue in the previous maps; the white areas do not form part of our analysis). We quantified the impact of the BSaB policy as the difference in crime before and after the implementation of BSaB for neighborhoods where BSaB took place (blue and with hatching in Figure 1) and those where it did not (blue but without hatching in Figure 1).

$$\begin{aligned} sDiD = E[Crime(after) - Crime(before)|BSaB = 1] \\ -E[Crime(after) - Crime(before)|BSaB = 0] \end{aligned} \tag{1}$$

Since the implementation of BSaB was staggered across neighborhoods, the before and after periods are not always the same, but rather differ across treatment observations.

It should be noted that the artificial nature of the geographical boundaries may introduce the problem of potentially capturing spillover effects across neighborhoods. This problem is a general concern in the urban economics literature when dealing with geographically small treatment and control units. In order to address this issue, researchers can either choose some types of crime that follow a more geographically concentrated pattern (such as Warner and Rountree 1997) or construct a unique exposure to the treatment measure (as in Takagi et al. (2012), where a weighting matrix assigned each unit a level of 'exposure' to treatment). In our current analysis, we followed the approach taken in Warner and Rountree (1997), and focused on types of crime with a clear location pattern,

such as those that mostly take place in residences, which above all are those we classify as intimate crimes. Additionally, due to the nature of the policy under evaluation, we also considered as a result, drug-related and anger crimes. It was possible to implement this strategy due to the finely detailed data we had that allowed us to overcome this problem. Restricting the study in such a way dispelled potential spillover concerns.

Taking the previous points into consideration, our first set of estimations directly tests the impact of BSaB on criminal activity as follows:

$$Crime_{it} = \alpha + \beta_1 T_{it} + \beta_2 BSaB_i + \beta_3 (T_{it}.BSaB_i) + \theta X_{it} + \gamma_t + \delta_i + \varepsilon_{it} \tag{2}$$

where the dependent variable is the victim/crime rate per 1,000 inhabitants, i is the neighborhood, t is the time period, $BSaB_i = 1$ for participants, $T_{it} = 1$ for the post-treatment period (different for each treatment unit), γ_t and δ_i are time and space fixed effects, X_{it} is a vector of socioeconomic controls (including local associations, housing prices, registered unemployment, tourism pressure) and ε_{it} is the error term. In the case of victims, we considered as dependent variables specific victim rates per 1,000 individuals, considering the characteristics of the victims in terms of gender, age and nationality. In the case of crime rates, we considered the overall crime rate, and the specific crime types, such as intimate and anger. In all cases, the sDiD estimator of the policy effect is given by β_3.

In addition, we wanted to analyze the differential effect of the policy depending on new local associations in the neighborhood. This would relate to the idea that community ties is a motivational force driving the effect that BSaB has on criminal activity. To test this hypothesis, we use the following equation:

$$\begin{aligned} Crime_{it} = \alpha + \beta_1 T_{it} + \beta_2 BSaB_i + \beta_3 (T_{it}.BSaB_i) \\ + \beta_4 (T_{it}.BSaB_i.Assoc_{it}) + \theta X_{it} + \gamma_t + \delta_i + \varepsilon_{it} \end{aligned} \tag{3}$$

Furthermore, responses over time were also studied by applying the following equation:

$$Crime_{it} = \alpha + \beta_1 T_{it} + \beta_2 BSaB_i + B_\tau (T_{it}.BSaB_i) + \theta X_{it} + \gamma_t + \delta_i + \varepsilon_{it} \tag{4}$$

Note that in this case, we have a set of policy effect estimates (B_τ, τ=1...M) that precisely indicate the policy effect for each month after policy implementation. First of all, this allows us to determine the speed at which the policy affects the different crime rates (if at all), therefore potentially leading to heterogeneous results among typologies. However, also importantly, as previously explained, this estimation helps us to disentangle the potential mechanisms behind the results.

6 Results

Firstly, in order to tackle possible endogeneity issues of treatment status, in Tables 3 and 4 we present a set of t-tests performed on differences between treatment and control units, previous to the intervention (in 2007). These indicate that there were no significant differences between treatment and non-treatment units in a set of observable socioeconomic and demographic characteristics. Regarding crime rates, differences appear at the level of broad crime categories, but not in their growth rates. Nonetheless, for drug crimes, differences were found, hence the results will have to be interpreted with caution.

Table 3: T-tests on pre-existing observable characteristics

Variable	**p-value**	**Variable**	**p-value**
Population	0.874	Teenage population	0.880
Men	0.932	Women	0.682
Spanish households	0.357	Non-Spanish households	0.153
Fecundity	0.062	Mortality rate	0.457
House prices	0.597	Vehicles	0.287
Associations	0.217	Tourism	0.134
Pensions	0.200		

Source: Our own, constructed from Barcelona City Hall data.

Table 4: T-test on pre-existing crime rates

Crime type	**p-value**		**Crime type**	**p-value**	
	rate	**growth**		**rate**	**growth**
All crime	0.001	0.702	Criminal damage to property	0.918	0.192
Property	0.002	0.525	Drugs	0.026	0.000
Person	0.003	0.103	Family	0.688	0.386
Intimate	0.000	0.276	Gender	0.000	0.125
anger	0.275	0.592	Bodily harm	0.159	0.883
			Disobedience	0.090	0.384
			Threatening behavior	0.079	0.924

Source: Our own, constructed from Catalan Police data

Furthermore, we estimated a logit model where the dependent variable was the treatment indicator; as well as a panel logit, where the timing of the treatment was considered. The results (in Tables A9 and A10 of the Appendix) show that our explanatory variables do not seem to explain either the fact of being included in the intervention or its timing.

These results represent a solid case in favor of the quasi-random assignment of the policy in the targeted area[15], or at least of the parallel trends assumption. Now that we have shown this, we proceed to the analysis of our main estimations.

[15]Such a feature was later confirmed informally by anecdotal evidence provided by the authorities running BSaB in the Barcelona Public Health Agency (ASPB). At informal meetings we learned that

6.1 Baseline results

Table 5 presents results based on the estimation of Eq.(2) for victim and crime rates, clustering standard errors at the neighborhood level (Cameron and Miller 2015). Accordingly, when it comes to becoming a victim of crime, the dependent variable is measured as the specific victim offense rate per 1,000 inhabitants of a certain group.

Overall, the results for the estimated impact of new motivators driving local community ties, such as BSaB, on local crime rates are mixed. Our results indicate that once we control for pre-existing social fabric, business cycle variables and tourism pressure, the policy itself shows no significant impact on victim rates by gender[16]. However, we can state that BSaB did have a direct negative impact on anger crime rates. Our results indicate that the BSaB intervention in a neighborhood reduced anger crime rates by 0.13, which roughly translates to an important average decrease of 9%. When analyzing its components, we conclude that the anger crime figures are mostly driven by criminal damages, which drops by 18%. Regarding intimate crime rates, we obtained less robust results[17]. Nonetheless, the results indicate that BSaB reduces intimate crime rates by 0.045, which implies a striking decrease of 18%. For this category, the results are mainly derived from gender crimes[18]. In these cases, it must be noted that crime rates are much lower than for other criminal typologies, making percentage decreases of higher magnitude. These less significant results may be linked to the fact that these crime categories represent a very small share of overall crime, thus leading to less robust results. Regarding drug crimes, which represent another important result considering the policy under study, we also found no direct effect of BSaB.

Therefore, even if we do not see a decrease in criminal activity across all its different aspects studied after the policy implementation, we do see important reductions in aspects of key relevance in light of BSaB. Moreover, it must be noted that our preferred specification, that in column 6, is very stringent and hence quite demanding for our estimates. Therefore, the results that still hold when such a set of controls is added are indeed quite solid.

the assignment of neighborhoods to the intervention did not follow any rule-based procedure and it was rather an arbitrary decision.

[16]Results for offenders, which are available upon request, were not statistically significant.

[17]Results for intimate crimes are significant at 13%.

[18]No significant effect of BSaB is found for sexual crime rates; while for gender and family crimes, the results were significant at 11%.

Table 5: Differences-in-Differences estimates

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Victims						
Male	4.747*	2.308**	2.315**	0.552	0.707	0.426
	(2.759)	(1.009)	(1.008)	(0.529)	(0.534)	(0.402)
R-squared	0.023	0.803	0.804	0.775	0.775	0.802
Female	6.379**	1.707	1.712	1.199	1.329	1.088
	(3.007)	(1.385)	(1.385)	(1.359)	(1.328)	(1.288)
R-squared	0.079	0.758	0.758	0.764	0.765	0.787
Observations	4,702	4,702	4,702	3,087	3,087	3,087
Panel B: Crime types						
Intimate	0.073**	-0.074	-0.074	-0.042	-0.042	-0.045
	(0.029)	(0.045)	(0.045)	(0.036)	(0.033)	(0.030)
R-squared	0.007	0.209	0.210	0.265	0.266	0.293
Observations	4,704	4,704	4,704	2,999	2,999	2,999
Anger	0.422	0.123	0.124	-0.123	-0.097	-0.129**
	(0.368)	(0.179)	(0.179)	(0.073)	(0.081)	(0.057)
R-squared	0.004	0.791	0.791	0.806	0.806	0.819
Observations	4,704	4,704	4,704	3,087	3,087	3,087
Drugs	0.055	0.013	0.013	-0.000	0.004	0.008
	(0.038)	(0.035)	(0.034)	(0.055)	(0.049)	(0.048)
R-squared	0.011	0.315	0.315	0.513	0.515	0.531
Observations	4,704	4,704	4,704	3,087	3,087	3,087
Neighborhood FE		x	x	x	x	x
Time FE		x	x	x	x	x
New Associations			x	x	x	x
Housing prices				x	x	x
Registered unemployment					x	x
Tourism						x

Note: Time fixed effects include year and month FE. Neighborhood-clustered standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

6.2 Role of Local Associations

Next, in Table 6 we present results based on the estimation of Eq.(3) for victim and crime rates. For these estimates, we incorporate an interaction term between the policy indicator and the new registered local associations. This reflects both the theoretical and anecdotal evidence, that such entities may play an important role in the effectiveness of the policy[19].

[19]This was also suggested by the IGOP research group when making a sociological evaluation of BSaB, as indicated in informal conversations with the researchers; despite this finding not appearing in any formal written document.

For these estimates, we did find a significant and negative coefficient for the effect of the interaction term on victim rates, both for men and women. However, joint significance tests indicate that the overall results are only significant for female victims. Regarding the age profile of the victims, we found significant results for all the age groups of women considered, but only on the extremes of the age distribution for men[20]. When analyzing which types of crime are more prominent according to victim characteristics, we clearly observed that women are considerably more exposed to becoming victims of intimate crimes; whereas for men, anger crimes are more frequent[21]. Indeed, while for the entire sample only 4.8% were victims of intimate crime, this value increases to 7.9% when only women are considered. This is due to the victim rate of gender violence, which is also more prominent among victims aged 25-45. On the issue of male victims, anger crimes represent a higher share of all crimes perpetrated against them. In this case, both criminal damages and bodily harm are more important than for the overall average[22].

Finally, concerning the matter of crime typologies, for intimate and anger crimes, the inclusion of the interaction term in our estimations did not add any new interpretation to the baseline results, as only a direct impact of BSaB was found to be significant. For the case of drugs, even if we did find a negative and statistically significant impact of the interaction term, the joint significance test showed that this no longer holds when considering both coefficients. Lastly, and in order to confirm that the policy did not have any impact on financially motivated crimes, we present results for auto theft for which, as expected, no significant results were found.

[20]Results available upon request.

[21]See Table A11 of the Appendix for further details.

[22]Regarding offenders, the results are less robust and no statistically significant impact was found for males or females. A significantly negative coefficient of the interaction term was found for young offenders under 18, but the joint significance tests did not reject the possibility of both coefficients being equal to zero. In this regard, even if we do not have formal proof, we believe this may be due to the fact that offenders are more mobile than victims; hence, it may be more difficult to recognize the effects of BSaB on them. Further studies should be carried out to examine this issue.

Table 6: Extended Differences-in-Differences

	Victims		**Crime types**			
	Male	**Female**	**Intimate**	**Anger**	**Drugs**	**Auto theft**
BSaB	0.893*	2.046	-0.043	-0.136**	0.038	-0.082
	(0.477)	(1.326)	(0.028)	(0.057)	(0.042)	(0.133)
Assoc	0.049	0.142*	0.005	-0.002	0.004	-0.010
	(0.044)	(0.080)	(0.003)	(0.009)	(0.003)	(0.008)
Assoc x BSaB	-0.397*	-0.814**	-0.002	0.006	-0.026*	-0.006
	(0.225)	(0.343)	(0.006)	(0.011)	(0.014)	(0.018)
R-squared	0.802	0.790	0.293	0.819	0.538	0.758
Observations	3,087	3,087	2,999	3,087	3,087	3,087
Joint Sign.	0.155	0.070	0.310	0.062	0.206	0.681
Neigh FE	x	x	x	x	x	x
Time FE	x	x	x	x	x	x
Housing prices	x	x	x	x	x	x
Unemployment	x	x	x	x	x	x
Tourism	x	x	x	x	x	x

Neighborhood-clustered standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

The results related to local associations indicate that BSaB only has an impact on female victim rates when jointly considered with the dynamic social fabric in the neighborhood. One way (the straightforward one) to understand such an implication is that BSaB would not work without the local associations. This would imply that if a particular neighborhood was assigned to the BSaB program but then local associations showed no dynamism, then the BSaB policy would not have any impact whatsoever on victim rates. However, a second way to interpret these results is to see BSaB as an factor that links associations to each other. According to this interpretation, the treatment and control units could then be seen as contexts in which associations become coordinated among each other (treatment), or remain individualized and isolated associations working on their own (controls). The treatment effect could then be given by the synergies caused by this linkage between local associations. Regardless of which of the interpretations is followed, the evidence supports the vision that the links formed in the neighborhood are indeed of key relevance for the success of a community-based policy such as BSaB. Hence, whenever a similar type of intervention is designed, this aspect of the neighborhood or area of intervention must be considered.

Additionally, our findings are of great value in light of the policy itself, as women victims are those who benefit most from it. This is extremely relevant for two reasons. Firstly, this is because many interventions were aimed at empowering women and raising awareness of sexual health and education. Even though most of the actions targeted younger population groups, there were also activities for middle-aged women. Secondly, it is because our findings indicate that progress was achieved on such an important issue as violence against women. Indeed, according to national statistics, in 2018 there were

over 30 thousand cases registered as gender violence in Spain.

Moreover, our results are in line with those of previous studies; while in many ways they represent improvements on some of the approaches previously adopted. For instance, Takagi et al. (2012) had already established that support networks and social capital are inversely associated with crime. However, crime was only measured for any kind of victim, making the analysis too broad and general. Moreover, Warner and Rountree (1997) also found that social ties significantly decrease crime. However, those results were again relatively limited, as a significant link was only found for assault rates in predominantly white neighborhoods. Our results are also related to those of Buonanno et al. (2009) and Lederman et al. (2002), although our findings differ from those. For example, Buonanno et al. (2009) do not find a clear effect of social capital on crime, but their dependent variable is property crime, proxied by auto theft. We did not find a significant effect on auto theft either. Moreover, Lederman et al. (2002) state that trust (seen as social capital) has a significant and robust effect on violent crime, proxied by homicide rates.

6.3 Event study results

In this subsection, we present estimations from Eq.(4), where we introduce effects over the time of the policy on local crime rates. This exercise indicates whether the effect of BSaB on local crime rates is relatively fast or alternatively, if it takes some time to have an actual impact on our variables of interest. This dynamic estimation was undertaken for intimate and anger crime rates. The results are presented in Figures 2 and 3.

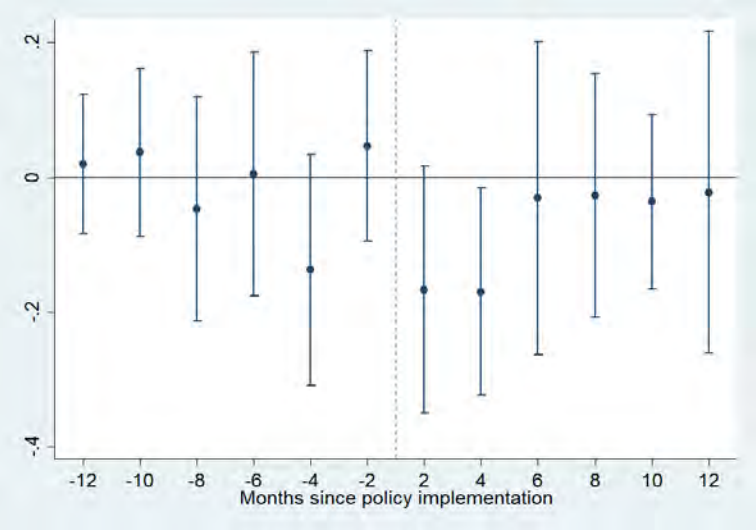

Figure 2: Dynamic estimation of rates of intimate crimes. 95% Confidence intervals.

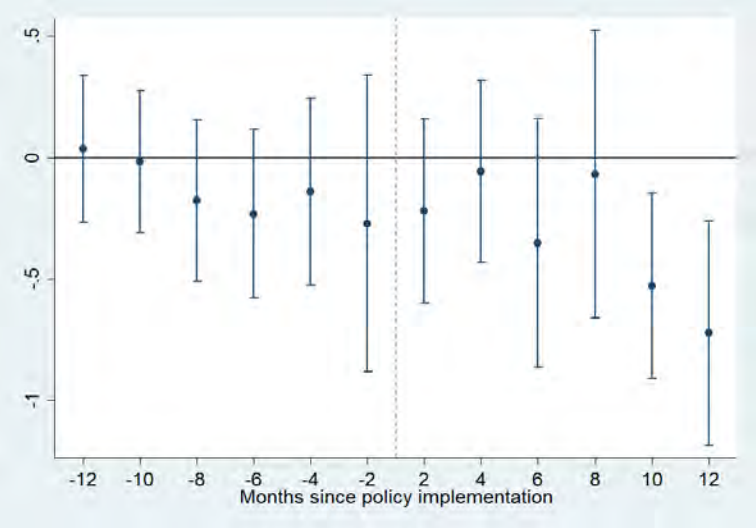

Figure 3: Dynamic estimation of rates of anger crimes. 95% Confidence intervals.

As the figures show, the impact of BSaB is different over time for rates of intimate and anger crimes. Figure 2 indicates that the effect of BSaB on intimate crime rates occurs in the very short run. Thus, the impact is quite immediate, showing a significant decrease just 2 months after policy implementation. However, Figure 2 also shows that the impact is quite ephemeral, as by month 6, the effect had already become diluted. A very different picture is found for anger crime rates. In this case, BSaB takes longer to affect local crime rates and is only significant 10 months after implementation. However, the effect persists longer over time. It is also important to note that the pre-treatment coefficients are not statistically different from zero in both cases.

6.4 Robustness checks

Table 7 presents several robustness checks for anger and intimate crimes. In all cases we found that the coefficient estimated for BSaB remained quite stable when using different sets of controls (columns 2 to 5). This result demonstrates the robustness of the previously results. The exception is column 2, where we consider only neighborhood tourism, instead of at the district level, and the coefficient is no longer significant for anger crime rates. However, such a definition of tourism may be too restrictive, especially in small neighborhoods like those in the historic central district of the city, which in our case are used as treatment units. Moreover, and very importantly, our falsification exercise (column 6), which assigns random treatment in terms of neighborhoods and roll-out, reflects no significant results.

Table 7: Robustness to alternative specifications

	Baseline		**Robustness checks**			**Falsification**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Anger						
BSaB	-0.136**	-0.106	-0.158***	-0.130**	-0.132**	0.007
	(0.057)	(0.078)	(0.055)	(0.057)	(0.059)	(0.022)
Assoc	-0.002	-0.004	-535.687	-0.009	-0.011	-0.002
	(0.009)	(0.010)	(556.385)	(0.139)	(0.012)	(0.009)
BSaB x Assoc	0.006	0.007	745.176	-0.109	0.004	0.003
	(0.011)	(0.0012)	(542.951)	(0.150)	(0.018)	(0.010)
Intimate						
BSaB	-0.043	-0.037	-0.054*	-0.045	-0.044	0.000
	(0.028)	(0.030)	(0.031)	(0.030)	(0.028)	(0.005)
Assoc	0.005	0.005	15.360	0.041	0.006*	0.003
	(0.003)	(0.003)	(80.496)	(0.053)	(0.004)	(0.003)
BSaB x Assoc	-0.002	-0.004	206.536	0.024	-0.001	0.001
	(0.006)	(0.005)	(186.869)	(0.052)	(0.006)	(0.003)

Note: Column 1 presents our main estimates from the previous section. In column 2, we change our tourism proxy, considering neighborhood ticket sales instead of district ticket sales. In column 3, we change the measure of existing community capital by considering per capita associations in the neighborhood instead of all associations. In columns 4 and 5, we also change the measure of associations by taking only a subset of them: in column 4, we consider only those which declared themselves to have an objective of providing assistance; and in column 5, we consider those categorized as cultural. Finally, in column 6, we present a falsification exercise of the BSaB policy. Year, month and neighborhood fixed effects are included. Neighborhood-clustered standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Additionally, we present results from the Safety and Victim Survey for Catalonia 2007-2014. In the Survey, individuals were questioned regarding items such as safety and civility in their neighborhood and district, as well as being asked about their experiences of being a victim of crime in the past 12 months. Specifically, individuals were asked whether they feel safety and civility have improved, worsened or stayed the same in their neighborhood in comparison to the previous year. We use this question by running a logistic regression on safety and civility having improved against the presence of BSaB in the neighborhood in that year. Estimates are presented in Table 8 and show significant results for safety. Indeed, the presence of BSaB raised the probability of perceiving an improvement in safety by approximately 3%. From this result, we surmise that even if local crime rates do not drop for all the categories analyzed, individuals living in the participating neighborhoods at least feel that safety has improved. However, no significant results were found for perceptions of civility. We believe that the fact that civility is less specific than safety may influence these results: it could be that each respondent has a different concept of civility (as broadly specified in the survey) and it may be more difficult to perceive.

Table 8: Average marginal effect of BSaB on perceptions of safety and civility

	Increased civility	**Increased safety**
BSaB	-0.007	0.032***
	(0.007)	(0.008)
Observations	21,779	21,779
Wald Chi2	225.98	160.90
FE	Y	Y

Note: Average marginal effect from logistic regression of improvement in safety and civility on implementation of BSaB with district and year fixed effects. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Finally, and in order to completely rule out health as a mechanism, we also conducted a brief analysis of those results. To do so, we relied on microdata from the Barcelona Health Survey (Encuesta de Salud de Barcelona, ESB) for the 2001-2016 period. Specifically, we made use of the 'health status' question, which is based on self-perception. Answers range from 1 (very bad) to 5 (very good). We then compared the answers of individuals in treatment and control neighborhoods in 2006 (just before BSaB) and in 2016 (after BSaB). The results (Figure 4) show firstly a worsening of health perception, and secondly no statistically significant differences in the means between individuals in treatment and control neighborhoods before and after BSaB implementation. Moreover, and in line with these results, Palència et al. (2018) find no evolution of self-rated health for men and women in treatment and control neighborhoods.

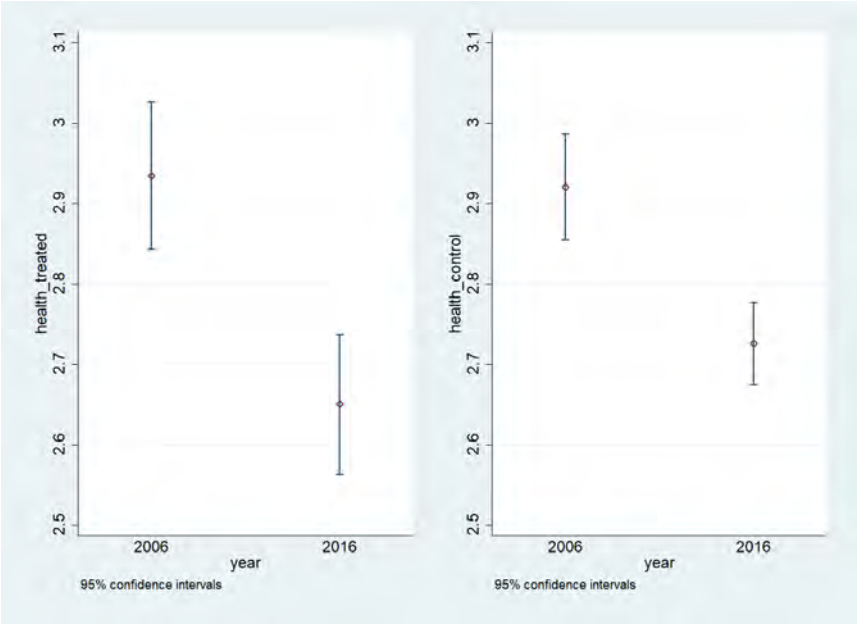

Figure 4: ESB mean answers by treatment status. 95% Confidence intervals.

7 Conclusion

In this paper we estimate the effect of increasing community capital on local crime rates, taking advantage of the quasi-random nature of a community health policy rolled out in the city of Barcelona from 2008 to 2014 (BSaB). The policy was implemented in 12 of the 49 potential neighborhoods and covered around a quarter of the targeted population. Even though the aim of the policy itself was to improve health outcomes in these underprivileged neighborhoods, we argue that the 'community' feature of BSaB led to an increase in community capital, and consequently to a reduction in crime rates. Using a staggered DiD approach, we find that this is indeed the case: female victim rates drop in participating neighborhoods, while anger crimes fell by 9%. We find less robust results for intimate crimes. Due to the dynamic analysis of criminal activity and the lack of an effect on self-rated health across treatment and control neighborhoods, we rule out health as the channel via which these s occur, and argue that the strengthening of community ties is the key mechanism.

As already mentioned, despite crime not being one of the specific targets of the policy itself, it is clearly indirectly linked to them, as crime rates reflect local disparities. Hence, we understand that the policy was successful in achieving one of its goals. However, we further understand that there is more to be done to improve the effectiveness of the program, as some key crime categories for the policy (such as drugs) were not affected by the program. In light of the results of the interaction term, new initiatives should be carried on, especially in cooperation with existing local institutions.

Moreover, this paper provides clear evidence that not only traditional policies against crime are effective. On the contrary, new and less disruptive means of reducing criminal activity in disadvantaged neighborhoods can be effective. Even if constructing community ties is more challenging than increasing traditional policing or patrolling, this type of innovative (alternative) policies may work better in several contexts. Takagi et al. (2012) argue that policy-makers should not neglect policies aimed at reducing inequalities as a means to promote social cohesion, social stability, and safer neighborhoods. A better understanding of the interactions between social cohesion and public policy is essential if we are to reduce criminal activity induced by the lack of integration of some citizens facing substandard social and economic conditions.

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Appendix

Neighborhood and BSaB characteristics

Table A1: Neighborhood characteristics: population and rent

District		Neighborhood	Pop 07	Pop 14	Rent 07	Rent 14	Low Inc.	Treatment
0	0	Barcelona City	1.603.178	1.613.393	100	100	NA	NA
1	1	el Raval	46.595	48.471	64,7	65,9	Y	Y
1	2	el Barri Gotic	27.946	15.911	86,5	98,5	N	N
1	3	la Barceloneta	15.921	15.181	66,7	84,5	Y	Y
1	4	Sant Pere, Santa Caterina i la Ribera	22.572	22.674	80,2	92,5	Y	Y
2	5	el Fort Pienc	31.521	31.785	107,9	104,5	N	N
2	6	la Sagrada Famlia	52.185	51.562	101,8	92,4	N	N
2	7	la Dreta de l'Eixample	42.504	43.749	137,6	165,3	N	N
2	8	l'Antiga Esquerra de l'Eixample	41.413	41.975	126,5	127,8	N	N
2	9	la Nova Esquerra de l'Eixample	58.146	57.863	116,9	109,1	N	N
2	10	Sant Antoni	37.988	38.369	103,8	97,8	N	N
3	11	el Poble Sec - Parc Montjuic	39.579	40.674	73,3	66,3	Y	Y
3	12	la Marina del Prat Vermell - Zona Franca	1.005	1.151	80,4	39,4	Y	N
3	13	la Marina de Port	29.327	30.286	80,2	72,0	Y	N
3	14	la Font de la Guatlla	10.064	10.406	90,4	77,6	Y	N
3	15	Hostafrancs	15.771	15.919	82,7	76,8	Y	N
3	16	la Bordeta	18.592	18.451	81,9	76,0	Y	N
3	17	Sants - Badal	24.085	24.245	85,9	79,6	Y	N
3	18	Sants	40.272	41.102	89,5	85,8	Y	N
4	19	les Corts	46.400	46.205	130,4	125,4	N	N
4	20	la Maternitat i Sant Ramon	23.938	23.735	127,9	112,6	N	N
4	21	Pedralbes	11.413	11.670	193,6	251,7	N	N
5	22	Vallvidrera, el Tibidabo i les Planes	4.038	4.615	146,4	162,8	N	N
5	23	Sarria	23.316	24.691	174,9	195,2	N	N
5	24	les Tres Torres	15.325	16.381	215,3	217,8	N	N
5	25	Sant Gervasi - la Bonanova	23.634	25.378	182,2	191,8	N	N
5	26	Sant Gervasi - Galvany	46.454	46.648	187,0	192,1	N	N
5	27	el Putxet i el Farro	28.990	29.041	150,2	140,2	N	N
6	28	Vallcarca i els Penitents	15.381	15.454	113,2	101,6	N	N
6	29	el Coll	7.190	7.307	91,7	81,6	Y	N
6	30	la Salut	13.072	13.256	113,0	107,3	N	N
6	31	la Vila de Gracia	50.409	50.680	101,9	118,1	N	N
6	32	el Camp d'en Grassot i Gracia Nova	34.535	34.146	104,3	103,7	N	N
7	33	el Baix Guinardo	25.816	25.587	96,6	86,6	Y	N
7	34	Can Baro	8.998	8.887	81,2	77,4	Y	N
7	35	el Guinardo	35.038	35.698	93,0	82,0	Y	N
7	36	la Font d'en Fargues	9.621	9.467	103,5	102,0	N	N
7	37	el Carmel	32.745	31.728	72,0	56,6	Y	N
7	38	la Teixonera	11.332	11.379	72,2	69,6	Y	N
7	39	Sant Genis dels Agudells	7.069	6.865	85,7	80,0	Y	N
7	40	Montbau	5.105	5.082	85,5	70,0	Y	N
7	41	la Vall d'Hebron	5.476	5.422	96,5	86,9	Y	N
7	42	la Clota	445	529	89,9	90,1	Y	N
7	43	Horta	26.638	26.591	85,9	82,2	Y	N
8	44	Vilapicina i la Torre Llobeta	25.672	25.500	83,0	64,0	Y	N
8	45	Porta	23.470	24.424	75,3	58,3	Y	N
8	46	el Turo de la Peira	15.102	15.471	65,4	50,6	Y	N
8	47	Can Peguera	2.143	2.288	49,8	51,0	Y	N
8	48	la Guineueta	15.394	15.090	82,0	56,0	Y	N
8	49	Canyelles	7.539	7.014	76,7	61,0	Y	N
8	50	les Roquetes	15.756	15.668	60,9	50,8	Y	Y
8	51	Verdun	12.301	12.239	63,8	50,8	Y	N
8	52	la Prosperitat	26.696	26.171	72,6	53,7	Y	N
8	53	la Trinitat Nova	8.011	7.462	53,0	34,7	Y	N
8	54	Torre Baro	2.105	2.682	58,0	45,6	Y	Y
8	55	Ciutat Meridiana	10.929	10.356	59,4	39,2	Y	Y
8	56	Vallbona	1.267	1.353	51,6	39,9	Y	Y
9	57	la Trinitat Vella	9.992	10.268	74,8	45,9	Y	N
9	58	Baro de Viver	2.397	2.508	44,5	60,5	Y	Y
9	59	el Bon Pastor	12.332	12.758	66,2	59,6	Y	Y
9	60	Sant Andreu	55.171	56.496	85,9	76,6	Y	N
9	61	la Sagrera	28.469	28.914	88,1	74,9	Y	N
9	62	el Congres i els Indians	13.896	14.076	86,5	72,7	Y	N
9	63	Navas	21.454	21.949	92,9	83,3	Y	N
10	64	el Camp de l'Arpa del Clot	38.604	38.130	93,4	80,9	Y	N
10	65	el Clot	26.796	27.082	88,5	81,0	Y	N
10	66	el Parc i la Llacuna del Poblenou	13.104	14.814	103,2	88,6	N	N
10	67	la Vila Olimpica del Poblenou	8.783	9.391	132,8	150,8	N	N
10	68	el Poblenou	30.181	33.425	94,5	95,4	Y	N
10	69	Diagonal Mar i el Front Martim del Poblenou	9.775	13.351	101,1	168,8	N	N
10	70	el Besos i el Maresme	22.652	23.191	61,7	58,9	Y	Y
10	71	Provenals del Poblenou	18.731	20.184	85,7	91,7	Y	N
10	72	Sant Marti de Provenals	26.261	26.018	81,5	67,6	Y	N
10	73	la Verneda i la Pau	29.452	28.903	74,8	57,2	Y	Y

Table A2: BSaB activities by scope

Intervention	**Target population**	**Neighborhoods**
Early Childhood and Family		
Healthy leisure in sports	Primary-school students	Poble Sec
Healthy leisure in sports	Middle-school students	Roquetes, Bon Pastor, Baro de Viver
parenting skills programs	Parents of children aged 3-5	El Born, Torre Baro, Ciutat Meridiana, Vallbona, Barceloneta
Healthy cooking workshops	Parents of children aged 3-17	Poble Sec
Support for extracurricular activities	Primary-school families	Roquetes, Barceloneta
Adolescents and young adults		
Healthy leisure in sports	High-school Students	Roquetes, Poble Sec, El Born, Torre Baro, Ciutat Meridiana,Vallbona
Healthy leisure at night	Those aged 14-18	Torre Baro, Ciutat Meridiana, Vallbona
Sexual health and counseling	Those aged 14-25	Torre Baro, Ciutat Meridiana, Vallbona, Raval
Sex education on contraception	Under 20s	Torre Baro, Ciutat Meridiana, Vallbona, Bon Pastor, Baro de Viver
Drug Counseling	Under 21s	Roquetes, Poble Sec, Raval
Drugs, violence, and endogamic groups	15-29 year-olds at psycho-social risk	Bon Pastor, Baro de Viver, Raval
Improving self-esteem, empowerment and integration	Pakistani women aged 14-21	El Besos i el Maresme
Adults		
Sex education for adults	Women aged 20-50	Torre Baro, Ciutat Meridiana, Vallbona, Bon Pastor, Baro de Viver
Tai chi in the park	40 and above	Roquetes, Poble Sec, El Born, Torre Baro, Ciutat Meridiana, Vallbona, Bon Pastor, Baro de Viver, El Besos i el Maresme
Obesity, sedentary lifestyle, stress, anxiety, depression	Adults and the elderly	Bon Pastor, Baro de Viver
Elderly		
Memory Groups	The elderly	Roquetes
Help to take a walk around the neighborhood	The elderly	Poble Sec, El Born, Torre Baro, Ciutat Meridiana, Vallbona, El Besos i el Maresme
How to be healthy	The elderly	El Born, Bon Pastor, Baro de Viver, El Besos i el Maresme
All interested parties		
Alcohol abuse	Everyone	Barceloneta
Tobacco addiction	All smokers	Roquetes, Poble Sec
Home-made remedies	Everyone	Roquetes

Data description

Table A3: Description of main variables

Variable	Description	Source	Frequency availability
Crime counts	Registered criminal acts	Catalan police	Geocoded; Exact time
Offender counts	Registered offenders	Catalan police	Geocoded; Exact time
Victim counts	Registered victims	Catalan police	Geocoded; Exact time
Population	Registered inhabitants	Barcelona City Hall	Neighborhood; Year
Crime rate	Crime counts per 1,000 inhabitants	Police and City Hall	Neighborhood; Month
Victim rate	Victim counts per 1,000 inhabitants	Police and City Hall	Neighborhood; Month
Associations	Newly registered local associations	Catalan regional authorities	Neighborhood; Month
House prices	House market prices per square meter	Barcelona City Hall	Neighborhood; Month
Unemployment	Registered unemployment rate	Barcelona City Hall	Neighborhood; Month
Tourism	Per capita visitors to neighborhood tourist sites	Barcelona City Hall	Neighborhood;Month

Note: Crime rates are compiled monthly despite using the annual population.

Table A4: Broad and detailed crime categories

Broad	Share	Detailed	Share
Against Person	8.9	Family	0.7
		Gender violence	2.0
		Bodily harm	3.0
		Murder	0.1
		Sexual	0.3
		Threatening behavior	2.5
		Other	0.3
Against Property	86.6	Criminal damage to property	8.5
		Fraud	5.2
		Auto theft	11.4
		Robbery	14.5
		Theft	47.1
Other	4.5	Arson	0.0
		Drugs	0.7
		Environment	0.2
		Disobedience	1.8
		Road safety	1.8
Total	1		1

Source: Our own, constructed from Catalan Police data

Table A5: Descriptive statistics, crime rates per 1,000 inhabitants. 2007-2014

	All Neighborhoods		**Potentially participating**	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**
All	10.235	15.790	8.758	13.088
Person	0.735	0.882	0.759	0.987
Property	8.957	14.150	7.459	11.116
Other	0.543	1.445	0.540	1.641
Intimate	0.216	0.258	0.239	0.299
Anger	1.465	1.916	1.497	2.195
Drugs	0.065	0.271	0.044	0.181
Family	0.052	0.108	0.057	0.125
Gender violence	0.140	0.208	0.158	0.243
Bodily harm	0.284	0.476	0.271	0.500
Disobedience	0.176	0.424	0.167	0.436
Sexual	0.024	0.073	0.023	0.083
Threatening behavior	0.205	0.339	0.222	0.401
Obs	7,008		4,704	
Income <90% median	0.671		1	
Treatment group			0.245	

Source: Our own, constructed from Catalan Police data

Table A6: Descriptive statistic, offense rates per 1,000 inhabitants. 2007-2014

	All Neighborhoods		**Potentially participating**	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**
Men	4.703	8.990	4.492	9.417
Women	1.229	2.278	1.150	1.922
Men under 18	1.387	3.178	1.274	3.331
Men 18-25	14.755	28.065	13.322	28.519
Men 25-35	7.744	19.940	7.717	23.226
Men 35-45	6.038	14.700	6.177	16.887
Men 45-55	4.119	8.677	4.048	9.206
Women under 18	0.540	1.764	0.487	1.575
Women 18-25	4.399	9.488	4.001	9.555
Women 25-35	2.048	4.773	2.045	5.303
Women 35-45	1.584	3.351	1.581	3.611
Women 45-55	1.165	2.934	1.221	3.307

Source: Our own, constructed from Catalan Police data

Table A7: Descriptive statistics, victim rates per 1,000 inhabitants. 2007-2014

	All Neighborhoods		**Potentially participating**	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**
Men	7.743	10.888	6.848	10.650
Women	6.526	9.311	5.519	7.701
Men under 18	1.366	2.425	1.260	2.563
Men 18-25	16.492	33.832	13.163	32.469
Men 25-35	9.630	16.159	8.584	16.977
Men 35-45	9.167	15.149	8.694	17.224
Men 45-55	14.133	21.686	12.709	22.073
Women under 18	1.545	3.886	1.228	3.528
Women 18-25	19.318	39.312	15.172	37.343
Women 25-35	8.603	12.291	7.620	12.024
Women 35-45	7.015	9.390	6.354	9.275
Women 45-55	11.198	17.678	9.856	16.704

Source: Our own, constructed from Catalan Police data

Table A8: Descriptive statistics, control variables. 2007-2014.

	All Neighborhoods			**Potentially participating**		
Variable	**Obs**	**Mean**	**Std. Dev.**	**Obs**	**Mean**	**Std. Dev.**
New associations (number)	7,008	0.765	1.30	4,704	0.522	0.99
Tourism (tickets/population)	7,008	1.92	7.98	4,704	2.39	9.54
Reg. unemployment (rate)	5,256	0.07	0.02	3,528	0.08	0.02
House prices (euros/sqm)	4,762	2,362	1,005	3,087	2,023	893

Source: Our own, constructed from Barcelona City Hall data. Neighborhoods that potentially participated are those with an average income below 90% of the city median.

Table A9: Logit regression pre-intervention

P(Treatment)=1	**Coef.**	**Std. Err.**	**z**	**P>z**
Rent	-0.12	0.15	-0.64	0.520
Population	0.00	0.00	0.69	0.490
Mortality	0.06	0.06	1.11	0.68
Teenage birth rate	0.01	0.34	0.03	0.976
Non-Spanish population	0.00	0.00	0.97	0.333
Pensions	-0.02	0.03	-0.61	0.544
House prices	0.52	0.71	0.74	0.461
Overall crime	0.00	0.00	0.05	0.958
Associations	-0.41	0.62	-0.66	0.509
Tourism	0.07	0.11	0.61	0.540
Prob LR>chi2 =0.0000 ; Pseudo R2=0.7554				

Note: Robust standard errors. Data from Barcelona City Hall.

Table A10: Panel logit regression for intervention timing

P(BSaB)=1	**Coef.**	**Std. Err.**	**z**	**P>z**
Rent	0.03	0.29	0.090	0.925
Population	0.00	0.00	-0.880	0.377
Mortality	0.02	0.02	1.350	0.178
Teenage birth rate	0.40	0.34	1.180	0.239
Non-Spanish population	0.00	0.00	0.880	0.378
Pensions	-0.04	0.04	-1.200	0.230
House prices	-0.51	0.19	-2.730	0.006
Overall crime	0.00	0.00	1.140	0.253
Associations	0.42	0.55	0.770	0.440
Tourism	0.04	0.13	-0.06	0.956
/lnsig2u	5.26	0.53		
sigma_u	13.89	3.66		
rho	0.98	0.009		
Prob W>chi2 =0.01056 ; Prob LR (rho=0)>chi2 =0				

Note: Robust standard errors. Data from Barcelona City Hall.

Additional descriptive statistics

Table A11: Crime distribution per victim characteristics

	All	**By Gender**		**By Age**				
		Women	**Men**	**<18**	**18-25**	**25-35**	**35-45**	**45-55**
Anger	21.37	18.73	23.61	23.2	18.64	22.69	23.95	22.24
Intimate	4.76	7.87	2.12	11.82	4.4	5.75	6.28	3.4
Criminal damages	8.57	6.41	10.4	0.67	4.33	8.23	10.08	11.03
Bodily harm	6.12	4.45	7.54	14.92	8.46	7.05	5.8	4.5
Law	1.44	1.9	1.05	1.37	1.43	1.63	1.72	1.4
Threatening behavior	5.24	5.97	4.62	6.24	4.42	5.78	6.35	5.31
Family	1.12	1.39	0.89	0.83	0.33	1.46	2.34	0.91
Gender	3.05	5.37	1.08	5.76	3.24	3.8	3.56	2.29
Sexual	0.59	1.11	0.15	5.23	0.83	0.49	0.38	0.2
Drugs	0.07	0.06	0.08	0.21	0.1	0.08	0.06	0.05

Source: Our own, constructed from Catalan Police data

2013

2013/1, Sánchez-Vidal, M.; González-Val, R.; Viladecans-Marsal, E.: "Sequential city growth in the US: does age matter?"
2013/2, Hortas Rico, M.: "Sprawl, blight and the role of urban containment policies. Evidence from US cities"
2013/3, Lampón, J.F.; Cabanelas-Lorenzo, P-; Lago-Peñas, S.: "Why firms relocate their production overseas? The answer lies inside: corporate, logistic and technological determinants"
2013/4, Montolio, D.; Planells, S.: "Does tourism boost criminal activity? Evidence from a top touristic country"
2013/5, Garcia-López, M.A.; Holl, A.; Viladecans-Marsal, E.: "Suburbanization and highways: when the Romans, the Bourbons and the first cars still shape Spanish cities"
2013/6, Bosch, N.; Espasa, M.; Montolio, D.: "Should large Spanish municipalities be financially compensated? Costs and benefits of being a capital/central municipality"
2013/7, Escardíbul, J.O.; Mora, T.: "Teacher gender and student performance in mathematics. Evidence from Catalonia"
2013/8, Arqué-Castells, P.; Viladecans-Marsal, E.: "Banking towards development: evidence from the Spanish banking expansion plan"
2013/9, Asensio, J.; Gómez-Lobo, A.; Matas, A.: "How effective are policies to reduce gasoline consumption? Evaluating a quasi-natural experiment in Spain"
2013/10, Jofre-Monseny, J.: "The effects of unemployment benefits on migration in lagging regions"
2013/11, Segarra, A.; García-Quevedo, J.; Teruel, M.: "Financial constraints and the failure of innovation projects"
2013/12, Jerrim, J.; Choi, A.: "The mathematics skills of school children: How does England compare to the high performing East Asian jurisdictions?"
2013/13, González-Val, R.; Tirado-Fabregat, D.A.; Viladecans-Marsal, E.: "Market potential and city growth: Spain 1860-1960"
2013/14, Lundqvist, H.: "Is it worth it? On the returns to holding political office"
2013/15, Ahlfeldt, G.M.; Maennig, W.: "Homevoters vs. leasevoters: a spatial analysis of airport effects"
2013/16, Lampón, J.F.; Lago-Peñas, S.: "Factors behind international relocation and changes in production geography in the European automobile components industry"
2013/17, Guío, J.M.; Choi, A.: "Evolution of the school failure risk during the 2000 decade in Spain: analysis of Pisa results with a two-level logistic mode"
2013/18, Dahlby, B.; Rodden, J.: "A political economy model of the vertical fiscal gap and vertical fiscal imbalances in a federation"
2013/19, Acacia, F.; Cubel, M.: "Strategic voting and happiness"
2013/20, Hellerstein, J.K.; Kutzbach, M.J.; Neumark, D.: "Do labor market networks have an important spatial dimension?"
2013/21, Pellegrino, G.; Savona, M.: "Is money all? Financing versus knowledge and demand constraints to innovation"
2013/22, Lin, J.: "Regional resilience"
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2013/25, Dargaud, E.; Mantovani, A.; Reggiani, C.: "The fight against cartels: a transatlantic perspective"
2013/26, Lambertini, L.; Mantovani, A.: "Feedback equilibria in a dynamic renewable resource oligopoly: pre-emption, voracity and exhaustion"
2013/27, Feld, L.P.; Kalb, A.; Moessinger, M.D.; Osterloh, S.: "Sovereign bond market reactions to fiscal rules and no-bailout clauses – the Swiss experience"
2013/28, Hilber, C.A.L.; Vermeulen, W.: "The impact of supply constraints on house prices in England"
2013/29, Revelli, F.: "Tax limits and local democracy"
2013/30, Wang, R.; Wang, W.: "Dress-up contest: a dark side of fiscal decentralization"
2013/31, Dargaud, E.; Mantovani, A.; Reggiani, C.: "The fight against cartels: a transatlantic perspective"
2013/32, Saarimaa, T.; Tukiainen, J.: "Local representation and strategic voting: evidence from electoral boundary reforms"
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2013/36, Coad, A.; Frankish, J.S.; Roberts, R.G.; Storey, D.J.: "New venture survival and growth: Does the fog lift?"
2013/37, Giulietti, M.; Grossi, L.; Waterson, M.: "Revenues from storage in a competitive electricity market: Empirical evidence from Great Britain"

2014

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2014/2, Garcia-López, M.A.; Solé-Ollé, A.; Viladecans-Marsal, E.: "Do land use policies follow road construction?"
2014/3, Piolatto, A.; Rablen, M.D.: "Prospect theory and tax evasion: a reconsideration of the Yitzhaki puzzle"
2014/4, Cuberes, D.; González-Val, R.: "The effect of the Spanish Reconquest on Iberian Cities"
2014/5, Durán-Cabré, J.M.; Esteller-Moré, E.: "Tax professionals' view of the Spanish tax system: efficiency, equity and tax planning"
2014/6, Cubel, M.; Sanchez-Pages, S.: "Difference-form group contests"
2014/7, Del Rey, E.; Racionero, M.: "Choosing the type of income-contingent loan: risk-sharing versus risk-pooling"
2014/8, Torregrosa Hetland, S.: "A fiscal revolution? Progressivity in the Spanish tax system, 1960-1990"
2014/9, Piolatto, A.: "Itemised deductions: a device to reduce tax evasion"
2014/10, Costa, M.T.; García-Quevedo, J.; Segarra, A.: "Energy efficiency determinants: an empirical analysis of Spanish innovative firms"
2014/11, García-Quevedo, J.; Pellegrino, G.; Savona, M.: "Reviving demand-pull perspectives: the effect of demand uncertainty and stagnancy on R&D strategy"
2014/12, Calero, J.; Escardíbul, J.O.: "Barriers to non-formal professional training in Spain in periods of economic growth and crisis. An analysis with special attention to the effect of the previous human capital of workers"
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2014/20, Duro, J.A.; Teixidó-Figueras, J.; Padilla, E.: "The causal factors of international inequality in co2 emissions per capita: a regression-based inequality decomposition analysis"
2014/21, Fleten, S.E.; Huisman, R.; Kilic, M.; Pennings, E.; Westgaard, S.: "Electricity futures prices: time varying sensitivity to fundamentals"
2014/22, Afcha, S.; García-Quevedo, J,: "The impact of R&D subsidies on R&D employment composition"
2014/23, Mir-Artigues, P.; del Río, P.: "Combining tariffs, investment subsidies and soft loans in a renewable electricity deployment policy"
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2014/30, Kilic, M.; Trujillo-Baute, E.: "The stabilizing effect of hydro reservoir levels on intraday power prices under wind forecast errors"
2014/31, Costa-Campi, M.T.; Duch-Brown, N.: "The diffusion of patented oil and gas technology with environmental uses: a forward patent citation analysis"
2014/32, Ramos, R.; Sanromá, E.; Simón, H.: "Public-private sector wage differentials by type of contract: evidence from Spain"
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2015

2015/1, Foremny, D.; Freier, R.; Moessinger, M-D.; Yeter, M.: "Overlapping political budget cycles in the legislative and the executive"
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2015/18, Costa-Campi, M.T.; Paniagua, J.; Trujillo-Baute, E.: "Are energy market integrations a green light for FDI?"
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2015/40, Mancebón, M.J.; Ximénez-de-Embún, D.P.; Mediavilla, M.; Gómez-Sancho, J.M.: "Does educational management model matter? New evidence for Spain by a quasiexperimental approach"
2015/41, Daniele, G.; Geys, B.: "Exposing politicians' ties to criminal organizations: the effects of local government dissolutions on electoral outcomes in Southern Italian municipalities"
2015/42, Ooghe, E.: "Wage policies, employment, and redistributive efficiency"

2016

2016/1, Galletta, S.: "Law enforcement, municipal budgets and spillover effects: evidence from a quasi-experiment in Italy"
2016/2, Flatley, L.; Giulietti, M.; Grossi, L.; Trujillo-Baute, E.; Waterson, M.: "Analysing the potential economic value of energy storage"
2016/3, Calero, J.; Murillo Huertas, I.P.; Raymond Bara, J.L.: "Education, age and skills: an analysis using the PIAAC survey"
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2016/10, Bianchini, S.; Pellegrino, G.; Tamagni, F.: "Innovation strategies and firm growth"
2016/11, Jofre-Monseny, J.; Silva, J.I.; Vázquez-Grenno, J.: "Local labor market effects of public employment"
2016/12, Sanchez-Vidal, M.: "Small shops for sale! The effects of big-box openings on grocery stores"
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2016/14, **García-López, M.A; Hémet, C.; Viladecans-Marsal, E.:** "Next train to the polycentric city: The effect of railroads on subcenter formation"
2016/15, Matas, A.; Raymond, J.L.; Dominguez, A.: "Changes in fuel economy: An analysis of the Spanish car market"
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2016/29, Daniele, G.; Dipoppa, G.: "Mafia, elections and violence against politicians"

2016/30, Di Cosmo, V.; Malaguzzi Valeri, L.: "Wind, storage, interconnection and the cost of electricity"

2017

2017/1, González Pampillón, N.; Jofre-Monseny, J.; Viladecans-Marsal, E.: "Can urban renewal policies reverse neighborhood ethnic dynamics?"
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2018

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2019

2019/1, Mediavilla, M.; Mancebón, M. J.; Gómez-Sancho, J. M.; Pires Jiménez, L.: "Bilingual education and school choice: a case study of public secondary schools in the Spanish region of Madrid"
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